

**WHAT IS CLAIMED IS:**

- 1        1. A process for the preparation of an epoxidation  
2           catalyst which process comprises:
  - 3                (a) drying a silica gel carrier, comprising  
4                      silicon, having a weight average particle  
5                      size of from 0.1 mm to 2 mm, at a  
6                      temperature of from more than 200 °C to  
7                      300 °C; and,
  - 8                (b) contacting the carrier obtained in step  
9                      (a) with a gas stream comprising titanium  
10                  halide to obtain an impregnated carrier.
- 1        2. The process of claim 1, wherein the drying of  
2           step (a) is performed at a temperature which is  
3           higher than the temperature at which the  
4           impregnation of step (b) is performed.
- 1        3. The process of claim 1, wherein the amount of  
2           titanium halide supplied in step (b) is such that  
3           the molar ratio of titanium halide added to  
4           silicon present in the carrier is from 0.050 to  
5           0.063.
- 1        4. The process of claim 1, wherein the gas stream  
2           consists of titanium halide.
- 1        5. The process of claim 1, in which process the  
2           silica gel carrier has a surface area of at most  
3           500 m<sup>2</sup>/g.
- 1        6. The process of claim 1, wherein the silica gel  
2           carrier is dried for a period of time of from 1  
3           hour to 8 hours.
- 1        7. The process of claim 1, further comprising:
  - 2                (c) calcining the impregnated carrier to obtain a  
3                      calcined impregnated carrier; and,
  - 4                (d) hydrolyzing the calcined impregnated carrier.
- 1        8. The process of claim 7 further comprising:

- 2                         (e) contacting the carrier obtained in step (d)  
3                              with a silylating agent.
- 1         9. The process of claim 8, wherein the drying of  
2                              step (a) is performed at a temperature which is  
3                              higher than the temperature at which the  
4                              impregnation of step (b) is performed.
- 1         10. The process of claim 8, wherein the amount of  
2                              titanium halide supplied in step (b) is such that  
3                              the molar ratio of titanium halide added to  
4                              silicon present in the carrier is from 0.050 to  
5                              0.063.
- 1         11. The process of claim 8, wherein the gas stream  
2                              consists of titanium halide.
- 1         12. The process of claim 8, wherein the silica gel  
2                              carrier has a surface area of at most 500 m<sup>2</sup>/g.
- 1         13. The process of claim 8, wherein the silica gel  
2                              carrier is dried for a period of time of from 1  
3                              hour to 8 hours.
- 1         14. The process of claim 8, wherein the calcining of  
2                              step (c) is performed at a temperature of at  
3                              least 500 °C.
- 1         15. The process of claim 8, wherein the hydrolyzing  
2                              of step (d) is performed at a temperature in the  
3                              range of from 150 °C to 400°C.
- 1         16. The process of claim 8, wherein the silylating  
2                              agent comprises hexamethyldisilazane.
- 1         17. A process for the preparation of an alkylene  
2                              oxide which process comprises:  
3                                  contacting a hydroperoxide and an alkene  
4                              with a heterogeneous epoxidation catalyst; and,  
5                                   withdrawing a product stream comprising an  
6                              alkylene oxide and an alcohol and/or water,  
7                              wherein the catalyst was prepared according to a  
8                              process comprising:

- 9                             (a) drying a silica gel carrier, comprising  
10                             silicon, having a weight average particle  
11                             size of from 0.1 mm to 2 mm, at a  
12                             temperature of from more than 200 °C to  
13                             300 °C; and,  
14                             (b) contacting the carrier obtained in step (a)  
15                             with a gas stream comprising titanium  
16                             halide to obtain an impregnated carrier.
- 1         18. The process of claim 8, wherein the alkene  
2                             comprises propene and the alkylene oxide  
3                             comprises propylene oxide.
- 1         19. The process of claim 8, wherein the hydroperoxide  
2                             comprises ethylbenzene hydrogen peroxide and in  
3                             which the alcohol comprises 1-phenyl ethanol.
- 1         20. The process of claim 10, further comprising  
2                             dehydrating 1-phenylethanol to obtain styrene.